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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/942,586

08/31/2001

James Hager

571-737

9428

7590

11/16/2004

H. Samuel Frost
Bereskin & Parr
Box 401
40 King Street West
Toronto, ON M5H 3Y2
CANADA

EXAMINER

JOHNSTON, PHILLIP A

ART UNIT

PAPER NUMBER

2881

DATE MAILED: 11/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/942,586

Applicant(s)

HAGER, JAMES

Examiner

Phillip A Johnston

Art Unit

2881

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 August 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 and 6-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 6-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Detailed Action

1. This Office Action is submitted in response to Amendment dated 8-06-2004, wherein claims 1-4, and 6-24 are pending.

Claims Rejection – 35 U.S.C. 103

2. The following is a quotation of 35 U.S.C. 103 (a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-4, and 6-24 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Whitehouse, U. S. Patent No. 6,188, 066.

Whitehouse discloses a multipole ion guide (trap), which includes the following;

(a) An ion trap with exit lens 53, where the exit lens voltage (barrier height) is varied to trap and release ions having a selected charge state, as recited in claims 1-4, and 15-21, and 23. See Column 13, line 40-67; and Column 14, line 1-19.

(b) A low energy distribution of the ions, as recited in claims 2 and 17. See Column 13, line 9-38.

(c) The use of collisional cooling, as recited in claims 3 and 16. See Column 8, line 34-65.

(c) The use of a quadrupole rod set, as recited in claims 6-8. See Column 9, line 22-50; and Column 7, line 57-65.

(d) The use of mass analysis as recited in claims 9-14. See Column 6, line 19-43.

Regarding claim 24, Whitehouse (066) discloses the claimed invention except for a separation time period between 1 to 50 ms. It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize a separation time period between 1 to 50 ms, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Examiners Response to Arguments

4. Applicant's arguments filed 8-06-2004 have been fully considered but they are not persuasive.

Argument 1

Applicant states that "There is no indication or suggestion that the higher energy is due to the effective energy barrier experienced by groups of ions having other than the doubly charge state. Whitehouse specifically fails to understand this point, and his apparatus and method are effective only when applied to ions have the same charge state. Thus, it would not be obvious to a person skilled in the art, in view of Whitehouse, to identify a method to separate ions of different charges by providing an effective energy barrier that is a function of the charge state.

In summary, the present invention allows ions having substantially the same kinetic energy but different charge states to be separated. In contrast, Whitehouse's method and apparatus are useful only for distinguishing between ions having different energies and Whitehouse does not recognize the effect of ions having different charge states."

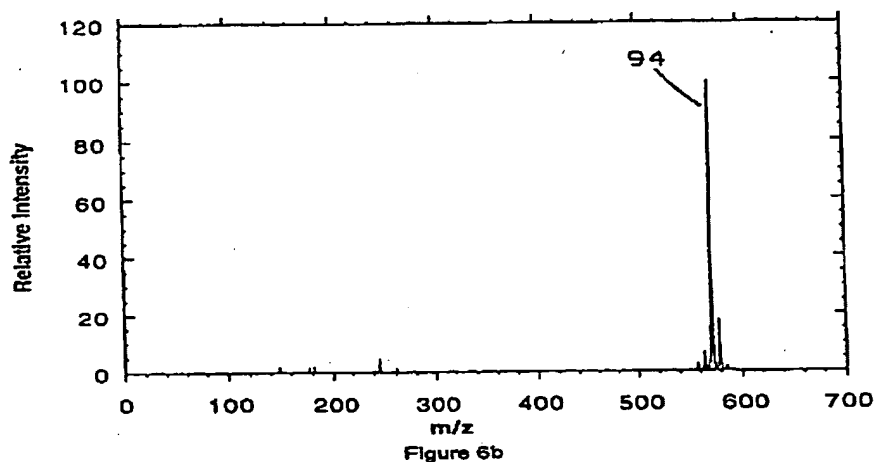
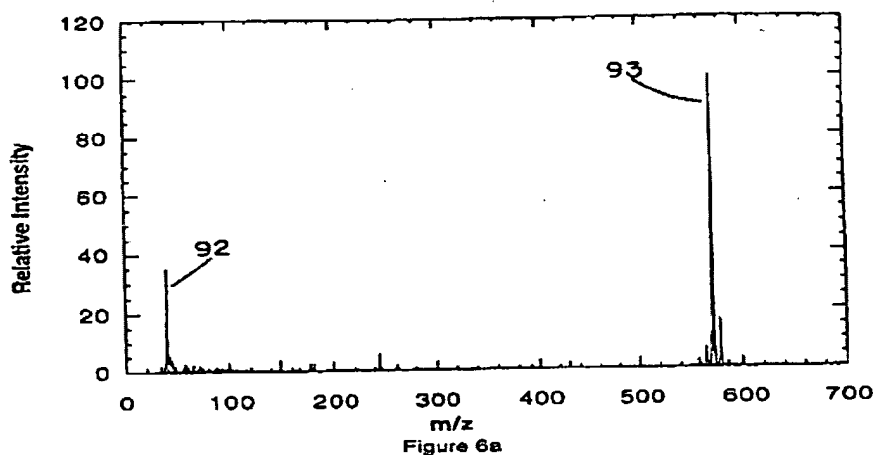
The applicant is respectfully directed to applicants published specification 20020175279, paragraph [0013], which states; To achieve a high level of separation of the first and second groups of ions, it is necessary to ensure that the energy distribution amongst the ions is sufficiently low, so that energy barrier will retain the second group of ions while permitting the first group of ions to empty or to escape. Accordingly, between steps (1) and (2), the method preferably includes ensuring that this energy distribution is low enough, to provide this separation. More preferably, this is achieved by thermalizing the ions with by collision with a neutral gas.

The applicant is also respectfully directed to Whitehouse (066), Column 12, line 19-28, and line 49-60, which states; FIG. 3 illustrates that the a_n and q_n values can be set so that a low or a high m/z cutoff in ion transmission occurs. For example if the RF frequency were set at 3 MHz and the RF amplitude operated anywhere from point 79 to 62 then ions with m/z 110 or lower would not be transmitted through the multipole ion guide to the mass analyzer. Similarly, if the RF frequency were operated at 7 MHz with the RF amplitude set at the value indicated by 77 then a high m/z cutoff in ion transmission through the ion guide to the mass analyzer would occur.

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In FIG. 6a the hexapole 40 q_3 value is set to transmit a wide m/z range and an impurity potassium peak 92 and the protonated doubly charged Gramicidin S peak 93 ($M+2H$)²⁺ are observed in the mass spectrum. FIG. 6b is a mass spectrum of the same Gramicidin S solution Electrosprayed using identical conditions as in FIG. 6a but with the hexapole 40 q_3 value is set so that a low m/z cutoff occurs. The potassium ions are no longer transmitted to the mass analyzer but the ion transmission efficiency of the doubly charged Gramicidin S ions as shown by peak 94, is still retained.

And Figures 6a and 6b below;



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The examiner has interpreted from the Whitehouse (066) references above that Whitehouse (066) varies the energy range of interest and the lens voltage of the ion guide to optimize the transmission of groups of ions having m/z (thus the charge state) values of interest, out of the ion guide for mass analysis. Whitehouse (066) clearly understands that, utilizing the combination of applied frequency and the exit lens voltage ramp as an energy/charge discriminator (energy barrier), specific ranges of m/z can be selected for transmission or retention, thereby improving spectral resolution (separation), which is equivalent to the applicants claimed invention.

Conclusion

5. The Amendment filed on 8-06-2004 under 37 CFR 1.131 has been considered but is ineffective to overcome the Whitehouse (066) references.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

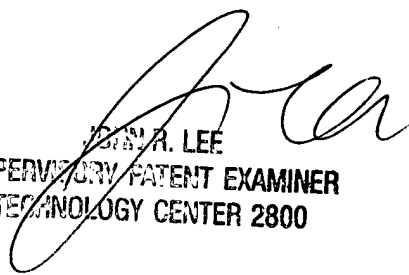
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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

6. Any inquiry concerning this communication or earlier communications should be directed to Phillip Johnston whose telephone number is (571) 272-2475. The examiner can normally be reached on Monday-Friday from 7:30 am to 4:00 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiners supervisor John Lee can be reached at (571) 272-2477. The fax phone number for the organization where the application or proceeding is assigned is 703 872 9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PJ
November 2, 2004


JOHN R. LEE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800